

## SOCIAL CAPITAL AS A FACTOR OF DEVELOPMENT OF A SMART CITY

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**Purpose:** Social capital constitutes an important factor in the development of a smart city. The adoption of this assumption facilitated the formulation three research questions: In what sphere do the city inhabitants participate in social networks? What is the level of trust shown to neighbours that create the local community? To what degree does the scope of information on the activities on behalf of the local community have an impact on their active participation?

**Design/methodology/approach:** The assumed goal was executed thanks to the application of the method of critical analysis of literary sources and the use of the survey method that served to identify the indicators of social capital in the context of the implementation of the principal assumptions of a smart city.

**Findings:** The findings of empirical research indicate that the level of social capital in the analysed city constitutes a significant barrier in terms of the development of a smart city. Structural capital in the form of neighbourly ties, which are usually restricted to five people, restricts the scope of neighbourly ties. Low relational capital, namely trust has a negative impact on the level of involvement of inhabitants in social initiatives. Engagement in urban social issues is dependent on the knowledge of social initiatives in the area of the district where they live. The application of information and communication technologies (ICT) increases the scope of information about projects and events organized in the city.

**Research limitations:** The acquired research findings with regard to their quantitative nature (survey research) constitutes the basis for the limited findings.

**Practical implications:** The research findings provide knowledge on the subject matter of the level of the existence of social capital and its barrier to development, which may serve the preparation of new solutions in the policies of a smart city.

**Social implications:** The research findings presented in this paper indicate the need to use information and communication technologies in the creation of social capital in the city.

**Originality/value:** The research findings, in a cognitive sense, lead to becoming familiar with the role of social capital in the development of a smart city.

**Keywords:** social capital, trust, social networks, smart city.

**Category of the paper:** Research article.

## 1. Introduction

Contemporary cities are searching for solutions in conditions of globalization and international competition that will ensure them of growth. One of these solutions is the concept of a smart city that has appeared over the last decade as a combination of ideas for this, such as information and communication technologies that can streamline the functioning of cities, while also increase their efficiency, improve their competitiveness and ensure new ways of counteracting poverty, deprivation and social pathology. Smart cities are not the future any more as we are already witnesses to their development. It is also envisaged that by 2040 the sector of smart cities will have created a market worth 400 billion dollars that will incorporate over 600 cities worldwide. These urban areas will constitute 60% of the worldwide GDP by 2025 (Duan, Nasiri, and Karamizadeh, 2019). Hence, it is worth following the factors determining their development. A smart city combines ICT with human and social capital, while also public institutions with the aim of dynamizing economic growth, as well as social and environmental development. Thus, a smart city is an intricate system that has divergent aims, needs and interests of various stakeholders. A smart city must meet these challenges by creating the ability to cooperate and co-create new competences in the spheres of innovativeness and competitiveness. Social capital may be useful in the attainment of these goals, as it constitutes its intangible value. Social capital is a notion that indicates the strength of ties between people both within and outside the urban community. It is a factor that facilitates the realization of the policy of the development of the urban community. With this aim in mind, the urban authorities should manage social capital appropriately, which is perceived as the process of shaping changes to its potential, namely its level and structure (planning, building and organizing resources), while also using the resources in its possession to achieve the assumed goals (Skawińska, 2012).

This paper develops new theoretical and empirical views of the subject matter of the impact of social capital on the implementation of the solutions of a smart city. The research was aimed at introducing two principal contributions in terms of the perception of the role of social capital in the development of a smart city. Firstly, the research led to the emphasis of the role of the attributes of social capital in the development of a smart city. Secondly, in this research the significance of the attributes of social capital were identified in terms of stimulating the civic activity of the city dwellers.

## 2. The concept of social capital

The notion of social capital was first introduced by Hanifan (1916) in his paper entitled “The Rural School Community Center”. Social capital was acknowledged to be benevolence, friendship, mutual affection, while also close social ties and cooperation between individuals and families creating a social group. Only in the 1980s was the concept of social capital developed by Bourdieu (1986), who defined social capital as the entirety of actual and potential resources associated with the possession of a constant network of institutional ties based on mutual familiarity and acknowledgement. Since then, a multitude of researchers have developed the concept of social capital. In conducting a review of the definitions of capital, it is possible to indicate four ways of perceiving it. In the first way, it appears in the form of resources that an individual possesses as a result of participation in the differentiated social networks. According to Nahapiet and Ghoshal (1998, p. 23), social capital is “...the sum of the actual and potential resources embedded within, while also available by means of and derived from the network of ties in the possession of the individual entity or social unit”. Embedding individuals in networks of social ties with other people creates the situation whereby cooperatives ties are formed on the basis of mutual trust and cooperation (Skiba, 2021). Such a network of cooperative ties created between citizens facilitates taking collective decisions (Brehm, and Rahn, 1997).

In the second perception of social capital, it is perceived to be collective properties – networks, values, norms and trust – which enable the members of society to achieve common goals. Fukuyama (1995) perceived social capital as the existence of a certain set of direct values or norms shared by the members of the group that facilitates their cooperation. One of the key values of social capital is that of trust. As noted by Stoll and Lewis (2002), cooperation and trust that are mutual, generalized and widespread are becoming the norms that influence decisions associated with everyday life. Mutual trust is the basic prerequisite and effect of group cooperation.

In the third notion, social capital is defined by its functions. As in the case of other forms of capital, social capital is productive and facilitates the achievement of goals. Its effects are the result of information, impact and solidarity, which makes it available for entities (Adler, and Kwon, 2002).

In the fourth notion, social capital is perceived as a network of ties characterizing the whole group and ensuring greater efficiency of its activities (Coleman, 1990). The quality of ties that facilitates cooperation among individuals and collective activities are based on the level of trust between people and the credibility of the public and political institutions.

For the purposes of this paper, the author at hand assumes that social capital signifies social ties and interactions which build trust and mutuality, while also strengthening the social activity of the city dwellers.

Social capital may take on a structural form, as well as relational and cognitive forms (Nahapiet and Ghoshal, 1998). Structural social capital relates to the properties of a social system and a network of ties in its entirety, while signifying the configuration and the pattern of communication between people that encompasses the role, principles and procedures as the expression of this configuration. The attribute of this capital is the number of ties with other people and its strength (Taylor, 2000). Relational social capital refers to personal ties, such as trust, respect and even friendship (Gooderham, 2007). A key attribute of relational capital is that of trust, which means the readiness of the parties to be subject to the activities of other parties on the basis of the expectation that the other party will conduct specified activities that are important for the trustee regardless of the ability to monitor or control (Mayer, Davis, and Schoorman, 1995). Cognitive social capital combines the resources that ensure joint representation, interpretation and systems of significance between the parties (Nahapiet, Ghoshal, 1998). They are cognitive schemes and systems of significance presented in a common dictionary and narrations that enable the understanding of the actions of actors.

In summing up the review of the principal theoretical approaches associated with social capital, it is possible to state that social capital is the result of the social relation and is based on the obligation or readiness of the connected actors to provide access to their own resources for the execution of common goals (Kabus, 2017). Hence, social capital signifies a component of the skills of cooperation and co-action of individuals within the framework of social groups, organizations and social institutions of various types for the realization of common goals (Januszek, 2005).

### **3. Social capital and concept of a smart city**

The term smart city is a polysemous notion and is used in various contexts that are not always cohesive. It was used for the first time in the 1990s. In that time, there was a concentration on new information and communication technologies with relation to infrastructure in cities. The Californian Institute of Smart Communities was one of the first to search for answers as to how it is possible to design a city that avails of the implementation of information technologies (Alawadhi et al., 2012). In later years, researchers developed the concept of a smart city by focusing on the more effective use of the resources of a city (namely, in an innovative, creative or smart way). The role of teleinformation infrastructure was first and foremost analysed, albeit a lot of research on human capital, social capital and relational capital, while also the environmental issue was also conducted as they are important driving forces of the development of cities. Of the multiple definitions of a smart city, it would seem that the most accurate notion was formulated by Kourtit and Nijkamp (2012), who acknowledged that smart cities are the result of creative strategies that are based on knowledge aimed at socio-

economic strengthening, while also ecological, logistical and competitive enhancement of the cities (Dziadkiewicz, 2014). Such smart cities are based on the following: human capital (e.g. skilled workforce), infrastructural capital (e.g. modern communication facilities), social capital (e.g. intensive open network ties), while also entrepreneurial capital (e.g. creative and risky business activities). Apart from the concept of a smart city, the concept of Smart Sustainable Cities (SSC) is being developed, which, basing on modern technologies leads to the fulfilment of the current needs of the city dwellers, while simultaneously taking account of the development of the needs of future generations (Kuzior, and Sobotka, 2019).

In the analysis of the concept of a smart city, an important role is played by its dimensions. At the same time, there is no consensus with regard to the magnitude. A literary review reveals that most frequently six components of a smart city are enumerated as follows: smart economy, smart people, smart governance, smart mobility, smart environment, smart living (Lombardia et al., 2012). Nam and Pardo (2011) place emphasis on smart management that should offer an environment that is favourable towards the development of entrepreneurship that is available to all citizens and the factor of smart people which consists of the following: constant learning throughout life, social and ethnical pluralism, cosmopolitanism, creativity, openness and active participation in the life of the city. A description of the dimensions of a smart city was summed up by Albino, Berardi, and Dangelico (2015), who on the basis of the research available distinguished four of its dimensions as follows: a) the network infrastructure of the city that facilitates political and social efficiency, while also cultural development, b) emphasis on the business development of the city and the creative activities for the promotion of its development, c) social inclusion of various groups of city inhabitants and social capital in the development of a city, d) the natural environment as a strategic element of the future.

The concept of a smart city assumes the physical connection of the spatial areas of the city with the economic and social spheres. Some researchers focus on the analysis of the ties between the vision of a smart city and its social dimension. In analyzing the strategies of a smart city, Angelidou (2014) places emphasis on the social aims, namely a) the development of human capital: empowerment of citizens (informed, educated and participatory citizens) and the strengthening of intellectual capital, while also creating knowledge associated with its social dimension; b) development of social capital by means of the execution of sustainable social development and digitization of the citizens; c) change in the behaviour in terms of the growth of the feeling of self-agency and significance (namely, the feeling that all city inhabitants are owners and co-own their city); d) taking account of the humanistic approach that occurs along with the implementation of technologies that react to the needs, skills and interests of the users, while simultaneously respecting their differentiation and individuality.

Taking account of social capital is worthy of broader discussion as a factor of a smart city. A smart city is one that invests in human and social capital, traditional (transport) and ICT, in which sustainable economic growth and a high quality of life are associated with participatory management (Caragliu, Del Bo, and Nijkamp, 2011). The basis of smart cities is the connection of human capital (Olejniczak-Szuster, 2021), as well as social and informational capital with the use of ICT infrastructures with the aim of generating economic growth, improving the environment and the quality of life of people (De Guimarães et al., 2020). In planning smart cities, researchers pay attention to the need to create social capital. In analysing the potential impact of digital transformation in smart cities in terms of the citizens and citizenship, Fothat, Hudson-Smith, and Gifford (2016) adopted social capital (civic capital to be precise) as one of the evaluation indicators. In turn, A. Caragliui, and Del Bo (2019) argued that social capital strengthens the effect of the distribution of advanced technologies in the city and has a positive impact on the innovativeness of smart cities. In analysing the role of social capital in the policies of smart cities, Mackeat, Rubim Sarate, and de Atayde Moschen (2019) claimed that first of all, policies should be designed from the viewpoint of the neighbourhood with regard to the ease of the perception of common values, while secondly the feeling of a community should be taken into account in terms of policies on behalf of the sustainable smart city; thirdly, with relation to designing districts and cities it is necessary to treat social interactions as a priority with the aim of building social capital and facilitating the implementation of policies. The designs of a smart city include the need to create participatory behaviour patterns, which increases the level of social capital. Van Brussel and Huyse (2019) suggested that a project of civic participation should promote a change in behaviour and lead to the solution to environmental problems. Numerous research projects have indicated significant ties between social capital and public health. Ramirez-Rubio et al. (2019) built international decision-making tools (Sustainable Development Goals – SDGs) that were designed for city policies that promote public health. Within the framework of SDGs, the authors propagate the development of social capital, namely social networks that catalyze cooperation and facilitate better performance associated with health (social and/or economic). In this way, social capital became an important element of urbanistic policies.

#### **4. Methods**

In research projects, focus is placed on searching for answers to the following three questions: In what scope do the city inhabitants participate in social networks? What is the level of trust towards neighbours that constitute the local community? To what degree does the range of information about activities on behalf of the local community have an impact on their active participation? In the search for answers to these questions, a survey method was used with the

technique of an environmental survey. The research was conducted in Czestochowa within the framework of the project entitled “Old city – new life”, which was co-financed by the EU within the framework of the European Social Fund. The research sample constituted 377 inhabitants of Czestochowa. The sample was selected on the basis of the stratified sampling method. The indicators of the research sample were as follows: level of trust – 95%, estimated magnitude of fraction – 0.5, error of estimation – 0.05. The research survey was participated in by 377 inhabitants of Czestochowa, who live in or frequent the district area of the Old City, of which 53.8% were women, while 46.2% were men, aged up to 18 – 8.6%, 18-29 years of age - 39%, 30-39 years of age – 12.2%, 40-49 years of age – 19.7%, 50 up to 59 years of age – 10.5%. In the analysed sample there were 13.6% of people with a higher level of education, 34.5% with secondary school and vocational school education, 32.9% with basic vocational school education, 19.0% with primary and middle school education, in which 46.9 % of people were active professionally, whereas pensioners and disability pensioners amounted to 19.10% and unemployed people totalled 24.9%.

## Results

Social capital in the concept of a smart city play a significant role as it signifies a component of the skills of cooperation and co-working of individuals within the framework of social groups, organizations and social institutions of various types for the realization of common goals. In this context, it is possible to mention the civic social capital, which encompasses informal networks and trust based on values and norms, while also participation in the associations and non-profit organizations that have an impact on the ability of individuals to act as a collective with the aim of achieving the common good (Knack, 2002). In the research on social capital in Czestochowa, the definition of capital formulated by Czapiński and Panka (2015) was adopted, according to which social capital is perceived as social networks regulated by moral norms or customs that connect an individual with society in a manner that facilitates cooperation with others for the common good. The resources of the social networks of inhabitants were adopted as indicators of such a perception of social capital, namely generalized interpersonal trust and voluntary participation in social activities on behalf of the urban community.

A significant attribute of social capital is the resources of social networks, their heterogeneity to be precise, namely mutual ties with other people. The so-called “density of interaction” is beneficial for the members of the community as its participant has ties with a multitude of beneficiaries that are offered by a social network (Sherchan, Nepal, and Paris, 2013). An indicator of the resources of social networks is the number of people with whom the individual makes contact for social or family purposes. The research reveals that first and

foremost, the inhabitants of Czestochowa create a network with acquaintances and friends, while subsequently with family members (Table 1). They usually maintain contact in the networks with a group of between two and five people (57.8%), while subsequently with one person (20.6%), or with a group constituting more than ten people (12.2%). Every tenth person analysed participates in social networks that constitute more than ten people. Social networks that are created in their immediate environment are important for the inhabitants. The research reveals that the inhabitants relatively seldom participate in expanded social networks. A mere one tenth of those analysed participate in networks of six or more people. Most frequently, the analysed inhabitants make contact with one neighbour (46.3%) or with a group of between two and five neighbours (39.6%). Sex type differentiates the analysed group in the case of the sense of belonging to more numerical social networks. Women frequently belong to neighbourly networks enumerating more than six people.

**Table 1.**

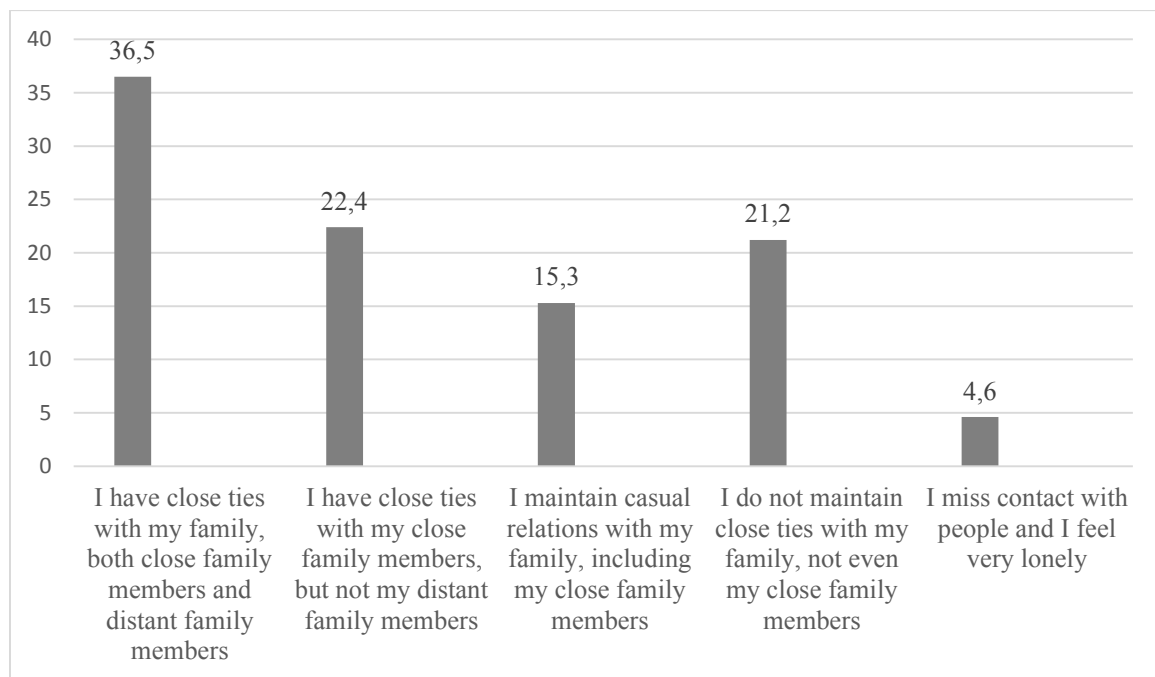
*Number of people in contact with those analysed for social and personal purposes in percentage form*

Type of people with whom those analysed create social networks		Women				Men			
		0-1 people	2-5 people	6-10 people	Over 10 people	0-1 people	2-5 people	6-10 people	Over 10 people
1.	From family circle	22.0	47.8	17.6	12.6	27.8	50.0	14.8	7.4
2.	From circle of friends, work colleagues, from school	18.5	53.8	14.9	12.8	28.7	56.3	9.8	5.2
3.	From circle of neighbours	52.7	34.2	10.3	2.8	35.3	55.1	9.1	0.5

Source: Self-analysis.

For the inhabitants of Czestochowa, an important role is played by family ties. Simultaneously, broader family ties are more significant for women than for men. Positive ties between family members are the foundation of family ties, which have an impact on the feeling of belonging to the family on the part of its members. Research reveals that a significant number of families of the inhabitants are featured by strong family ties, while simultaneously the strongest ties of the inhabitants are with their closest family members (Fig. 1). The weakest ties are featured by families that maintain scarce contact with their family members, even the closest members. The lack of ties with family members is declared by every fifth person analysed.





**Figure1.** Evaluation of family ties in percentage form. Source: Self-analysis.

In terms of the functioning of family ties, a significant role is played by the ties between the family members themselves. Their type and intensity has an impact on the cohesion of the family. Data analysis reveals that ties in families are usually based on mutual understanding, respect, trust and loyalty, which certifies to the appropriate functioning of these families (Fig. 2). Nevertheless, in every third family ties are usually based on conflict. This relates to conflict between the parents, between the parents and the children and between siblings. The relatively large group of respondents that does not have any knowledge of what is happening in the family as they fail to maintain any contact is curious. In the majority of cases, this refers to people who had poor contact due to its dispersion. To conclude, family networks are to a large extent based on mutual understanding, respect, trust and loyalty. However, some families base their ties on conflict, which is destructive in terms of their functioning.



**Figure 2.** Type of relations between family members in percentage form. Source: Self-analysis.

The second attribute of social capital is that of trust. This signifies trust best shown towards other people. It is based on the principle of mutuality along the lines of what should be done for another person without expecting immediate gratification, yet in the hope that in the future this person, or someone else, will return the favour. Mutuality is a social relation that constitutes the main rule of social exchange, while also safeguarding the fulfilment of the social obligation with regard to the partner of exchange in the form of the promise of good, services or gratification. In the functioning of the city, the cooperation between the inhabitants based on trust is significant. A significant indicator of social trust in the city is that of interpersonal trust with regard to neighbours, thus creating the local community. Research shows that the level of trust towards neighbours is at a relatively low level as a mere 14.6% of people have absolute trust in their neighbours, albeit 26.6% of inhabitants trust their neighbours within certain limits (Table 2). A lack of trust is declared by 20.1% of those analysed. A large group of respondents indicated “Difficult to say” (38.6%) in the categories of responses, which signifies that they have no opinion on this matter, thus it is possible to state that they maintain a certain distance when it comes to closer ties with their neighbours. Detailed analysis of interpersonal trust in the city under analysis indicates that men, people aged between 30-39, as well as people with higher level education and professionally active show trust towards their neighbours more frequently.

**Table 2.***Level of social trust towards neighbours in percentage form*

Type of variable	Majority of neighbours can be trusted	It is possible to trust the neighbours, but you can never be too careful	Neighbours cannot be trusted	Difficult to say
Sum	14.6	26.6	20.1	38.6
Sex type				
Women	14.2	26.0	20.1	39.7
Men	16.1	25.2	21.9	36.8
Age				
Up to 18 years of age	5.8	15.9	38.5	39.8
18-29 years of age	8.5	19.2	32.3	40.0
30-39 years of age	15.2	27.2	18.6	39.0
40-49 years of age	15.8	28.1	17.2	38.9
50 years of age and older	13.6	20.6	28.2	37.6
Education				
Higher	15.3	27.9	21.1	35.7
Secondary school	10.2	22.8	28.4	38.6
Technical school	8.8	15.9	35.2	40.1
Primary and middle school	8.0	12	39.1	40.9
Professional activity				
Professionally active	14.2	25.6	20.1	38.6
Pensioners and disability pensioners	8.5	18.9	34.0	38.6
Non-working people	7.2	16.5	37.7	38.6

Source: Self-analysis.

The lack of social trust, or its limited scope has a negative impact on social ties and on the cohesion of the local community. A high level of social trust restricts the occurrence of social conflicts, however a low level of social trust has an impact on their emergence. Research indicates that conflicts relatively frequently occur between inhabitants. Their high frequency was indicated by every tenth person analysed (11%). Nevertheless, one third of those analysed indicated that they come into conflicts from time to time (32%). More than half of the analysed inhabitants (57%) do not come into conflicts with their neighbours. In sum, the research findings illustrate significant ties between trust and coming into conflicts with neighbours. People who do not trust their neighbours frequently come into conflicts with them.

The third attribute of social capital is the activity of the inhabitants in public life. A manifestation of social activity is the degree of engagement in matters of other people and local communities. Detailed analysis of the scope of engagement of those analysed in local activities illustrates that the respondents declared involvement in the activities of local communities in terms of the civic budget and voluntary work. Simultaneously, the frequency of these activities was at a low level. If we take the general involvement in social activities at a local level into account, 42.1% participated in such activities in the neighbourly communities (Table 3). The inhabitants rarely take part in the other forms of activities. In sum, the civic activity of the inhabitants is at a relatively low level, while at the same time it does not diverge from the level of activity of people in Poland. According to research by Centrum Badania Opinii Społecznej (Centre of Research on Social Opinion -2018), in Poland activity on behalf of local communities is at a similar level. Only 23% of Polish people undertook activities on behalf of

the inhabitants of their own local communities, cities, districts or housing estates. In turn, every sixth person analysed claims that within the last two years they worked voluntarily on behalf of the local communities within the framework of non-governmental organizations, while also got involved as a voluntary worker in various types of social activities (14%), collected signatures for a petition or intervened in an administrative office with regard to a specific issue (13%), or conducted social activity in the local parish or other religious organization (10%). Breaking through the barrier of reluctance in terms of activities on behalf of the community is key in terms of enhancing the quality of life and building the social capital of the district.

**Table 3.**

*Frequency of engagement of those analysed in social activities in the city in percentage form*

Type of activity		Type of frequency					Sum
		No	Rarely	Yes, from time to time	Yes, frequently	Yes, always or almost always	
1.	Activities of neighbourhood community (e.g. clearing the backyard)	57.9	18.7	17.1	5.1	1.2	100
2.	Activities of parish (e.g. clearing the church)	76.9	8.4	10.7	1.7	2.3	100
3.	Activities of local non-governmental organizations	67.2	14.0	12.3	5.2	1.3	100
4.	Participatory budget	67.7	11.9	9.8	2.6	6.2	100
5.	Meetings of District Council	81.0	10.6	6.1	1.0	1.1	100
6.	Other voluntary activities (e.g. non-profit)	79.7	5.9	8.9	2.5	3.0	100

Source: Self-analysis.

Engagement in local issues grows when the inhabitants are informed about events and the activities undertaken in the area where they live. Research shows that the degree of information is varied depending on the range of activities undertaken (Table 4). The inhabitants possess the greatest knowledge in terms of enterprises and events organized in the close environs, e.g. in the district or backyard where they live and in the very building where they live. They possess relatively less knowledge about events and activities undertaken in the housing estate and in the city of Czestochowa as a whole.

**Table 4.**

*Degree of information about events and activities organized in local communities in percentage form*

Type of place		Type of degree				Sum
		High degree	Medium degree	Low degree	Not informed at all	
1.	In Czestochowa	11.1	28.3	48.6	12.0	100
2.	In the district where I live	16.6	31.5	45.3	6.6	100
3.	In the housing estate/in the backyard where I live	21.5	35.0	33.8	9.7	100
4.	In the building where I live	19.2	32.3	33.7	14.8	100

Source: Self-analysis.

Although the inhabitants are informed about what is happening in the close environment, the problem is possessing information about events and activities undertaken in the entire housing estate in the city as a whole. Thus, the question arises as to whether they look for information with regard to events and activities organized in the area of the housing estate. Analysis of the research findings shows that a small number of those analysed (3.2%) search for such information on a regular basis. Relatively more people search for such information from time to time (16.6%), albeit 39.6 % of those analysed seldom search for such information. However, 40.6% of those analysed do not search for information about events and social activities at their place of abode at all.

The degree of information has an impact on the participation in activities on behalf of the local community. Detailed analysis of the ties between the level of engagement in social activities and the degree of information received about events and activities organized in local communities facilitated the definition of their relation. The Gamma correlation was availed of in order to analyse these relations. The degree of information received has first and foremost an impact on the activities of neighbourly communities (e.g. cleaning up the backyard) with relation to such events (Gamma indicator  $\gamma = 0,405$ ,  $p = 0,000$ ). Hence, the greater the degree of information received regarding social activities in the district, the more likely they are to participate in them. Likewise, the level of engagement of the inhabitants in initiatives undertaken by local non-governmental organizations is influenced by the degree of information received with regard to these initiatives (Gamma indicator  $\gamma = 0,360$ ,  $p = 0,0000$ ). A relatively lesser impact on active participation in the civic budget is exerted by the degree of information received ( $\gamma = 0,243$ ,  $p = 0,0004$ ), other voluntary activities (non-profit) ( $\gamma = 0,236$ ,  $p = 0,0008$ ) and activities of the local parish ( $\gamma = 0,156$ ,  $p = 0,0031$ ). Nevertheless, the ties between the degree of information received and participation in the meetings of the District Council and activities of the parish were not illustrated.

To conclude, informing the city inhabitants about events and activities undertaken in the area of the district and the city as a whole is an important task for the local authorities. The choice of form and tools applied for the purpose of passing on information is key. The local authorities can choose traditional sources in the form of placing information in the local mass media, or choose modern ways of communication. With relation to this fact, the recognition of the expectations of the inhabitants with regard to the type of medium for information to be passed on is relevant.

Research indicates that in the case of the inhabitants, this medium would be the district paper (44.3%), while subsequently notice boards (35.8%), specially dedicated websites for the events in the district (31.3%), while also applications on a smartphone and electronic forms of information by way of text messages (23.6%). In sum, the inhabitants first and foremost place emphasis on the traditional forms of providing information about events and activities in the housing district. They are interested in modern electronic media forms to a lesser extent. lease put here the acknowledgements for private individuals or institutions that contributed

significantly to the publication, as well as information about the projects in which the article was created. This section is optional and can be omitted by the author.

## **Discussion and Summary**

In this research, the attributes of social capital that have an impact on the development of a smart city were identified. One of these is that of neighbourly networks. A cohesive neighbourhood strengthens the collective efficiency, which relates to the degree of which the neighbours are ready to “intervene on behalf of the common good” (Altschuler, Somkin, and Adler, 2004). Participation in the neighbourly networks has an impact on the level of engagement of the inhabitants in terms of activities aimed at greater social cohesion. The social engagement of inhabitants is to a significant extent dependent on the information received about the activities undertaken by others. The inhabitants have the most information about social initiatives undertaken in their closest neighbourhood, namely in the building or area where they live. However, they do not have information about social activities undertaken in the housing estate or in the city as a whole. Research indicates that the more information the inhabitants have about social activities in their district, the more they participate in them. Hence, it is possible to assume that neighbourly networks may help the solutions of a smart city effectively, yet knowledge about them is significant. Similar findings were acquired by Nakano and Washizu (2021), who during the course of analysing social capital in Minato Mirai 21, discovered that information about the social initiatives acquired from social networking services serves the inhabitants by way of enhancing their everyday life, while also intensifying the social ties in the district. With the aim of informing the participants of neighbourly networks better with regard to the various social initiatives, it is possible to avail of ICT. In particular, elderly people who avail of ICT may be more involved from a social viewpoint. ICT prevents their isolation in society and improves their social capital (Kokubun et al., 2022). Giatsoglouat et al. (2016) propose the building of a module platform of City Pulse, on the basis of the analysis of social data in the context of a city. This platform on the basis of a designed backend system, with the appropriate methodology of storage, aggregation and analysis of data, provides access to differentiated data by means of the interfaces of Internet services to stakeholders that serve the fulfillment of their needs. The research findings show that those who avail of the most modern means of communications have better social capital, which in turn translates to a greater feeling of well-being (Kokubun et al., 2022).

A further attribute of social capital that has an impact on the implementation of solutions of a smart city is that of trust, which is strongly connected with neighbourly and family ties. The increased interactions in networks builds trust, which in turn reduces social isolation and divergences in terms of the opportunities between the citizens of various categories of income,

while also increasing civic partnership (Mason, 2010). Research reveals that low trust constitutes a barrier to the development of a smart city in Czestochowa. Hence, it is worth undertaking activities aimed at building greater trust among neighbours, which would have a greater impact on the cohesion of the local communities and would also enhance the standard of living of the inhabitants.

In the implementation of the concept of a smart city, it is helpful to engage the inhabitants in activities on behalf of the city itself and the urban communities. Smart cities usually generate new solutions of hybrid management (Brandtner et al., 2017), in which the significant actors are the inhabitants who are involved both as collective actors organized into formal non-governmental organizations, as well as individual stakeholders. By engaging the members of the community in the creation of policies and becoming familiar with their opinions and viewpoints, the authorities acquire new and broader views of urbanistics, management and development while taking account of the real needs of the city inhabitants (Szarek-Iwaniuk, and Senetra, 2020). A smart city is based on understanding the development of smart cities as a common undertaking of the political authorities and other stakeholders, including the inhabitants themselves, which in turn is favourable towards the development of the “smart inhabitant” (Ros, Thiel, and Grabher, 2022). Research shows that the level of involvement in activities on behalf of the other inhabitants and the city of Czestochowa is at a low level, which is not divergent from other cities. If they do participate, it is most frequently in terms of activities of neighbourly communities, the civic budget and in voluntary work.

To sum up, research on the attributes of social capital in Czestochowa indicates a low level. Their enhancement would lead to the streamlining of the execution of self-government policies by means of strengthening the level of cooperation between the inhabitants. The increase in the level of social capital would help to implement the concept of a smart city in the city under analysis.

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